Amendment to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1.    (Currently amended) A method, comprising:

analyzing a plurality of images which includes a specified desired feature therein to select a plurality of selected features; and

automatically detecting features within said plurality of images;

automatically forming a model for further recognition of said specified feature, using said selected features; and

clustering among said features which are automatically detected by vector quantizing said features to reduce the total number of detected features, wherein said clustering also includes moving said features to combine similar features which are spatially offset.

2.    (Canceled).

3.    (Canceled).

4.    (Canceled).

5.    (Original) A method as in claim 1, wherein said

6

automatically determining a model comprises probabilistically estimating which of the features are most informative for the model.

6.   (Original) A method as in claim 5, wherein said automatically determining comprises assessing a joint probability function based on part appearance and shape.

7.   (Original) A method as in claim 5, further comprising assembling a matrix of feature candidate positions indicating possible relevant parts, and statistically assessing whether said relevant parts are likely to be useful.

8.   (Original) A method as in claim 6, wherein said joint probability function is estimated using expectation maximization.

9.   (Currently amended) A method as in claim 1, [[a]] further comprising forming a model using a plurality of recognized parts.

10.   (Currently amended) ~~A method as in claim 9,~~ A method, comprising:

     analyzing a plurality of images which include a specified

7

desired feature therein to select a plurality of selected features;

automatically forming a model for further recognition of said specified feature, using said selected features;

forming a model using a plurality of recognized parts; and

wherein said forming a model includes an iterative process which determines if a change from one part to another part improves the result of the model.


11.    (Currently amended) A method, comprising:

automatically analyzing an image to find features therein;

grouping said features with other similar features to form clustered features;

statistically analyzing said features using expectation maximization, to determine which of said features are statistically most relevant; [[and]]

forming a model using the statistically most relevant features;

wherein said grouping features comprises vector quantizing said features and grouping similar quantized features; and

wherein said grouping features further comprises spatially moving said features to group features which are different but spatially separated.

8

12.    (Original) A method as in claim 11, wherein said automatically analyzing comprises using an interest operator on a plurality of images.

13.    (Canceled).

14.    (Canceled).

15.    (Original) A method as in claim 11 wherein said statistically analyzing comprises estimating which of the features are actually most informative of the desired item to be recognized.

16.    (Currently amended) ~~A method as in claim 15,~~ A method, comprising:

automatically analyzing an image to find features therein;

grouping said features with other similar features to form clustered features;

statistically analyzing said features using expectation maximization, to determine which of said features are statistically most relevant; and

forming a model using the statistically most relevant features;

wherein said grouping features further comprises spatially

9

moving said features to group features which are different but spatially separated; and

wherein said statistically analyzing comprises establishing a correspondence between homologous parts across the training set of images.


17.   (Currently amended) An article comprising:

a machine-readable medium which stores machine-executable instructions, the instructions causing a machine to:

automatically analyze a plurality of training images which includes a specified desired feature therein, to select a plurality of selected features;

establish correspondence between homologous parts in the plurality of training images; and

automatically form a model for further recognition of said specified feature, using said selected features.


18.   (Currently amended) An article as in claim 17, further comprising instructions to vector quantize said features to reduce the total number of detected features.


19.   (Currently amended) An article as in claim 17, wherein said automatically determining a model further comprising instructions to probabilistically estimating which of

10

the features are most informative for the model.

20. (Currently amended) An article as in claim 17, further comprising instructions to assemble a matrix of feature candidate positions indicating possible relevant parts, and statistically assess whether said relevant parts are likely to be useful.

21. (Original) A method as in claim 6, wherein said joint probability function is estimated using expectation maximization.

22. (Currently amended) An article as in claim 17, further comprising instructions to form a model using a plurality of recognized parts.

23. (Currently amended) An apparatus, comprising:

a computer, forming:

a plurality of feature detectors, reviewing images to detect parts in the images, some of those parts will correspond to the foreground as an instance of a target object class, and other parts not being an instance of the target object class, as part of the background;

a hypothesis evaluation part, that evaluates candidate

11

locations identified by said plurality of feature detectors, to

determine the likelihood of a feature corresponding to an

instance of said target object class;

wherein said evaluation part operates by:

defining the parts as part of a matrix;  and

assigning variables representing likelihood whether

foreground or background to the parts in the matrix.

24.    (Canceled).

25.    (Original) An apparatus as in claim 23, further

comprising

classifying the images into the classes of whether the

object is present (c1) or whether the object is absent (c0) by

choosing the class with the maximum a posteriori probability.

26.    (Currently amended) A method comprising:

reviewing images to detect specified parts in the images;

assigning a variable that defines some of those parts

corresponding to the foreground as an instance of a target

object class, and other parts not being an instance of the

target object class, as part of the background, said assigning

including evaluating candidate locations identified by ~~said~~ a

plurality of feature detectors, to determine the likelihood of a

12

feature corresponding to an instance of said target object

class;

wherein said assigning comprises:

defining the parts as part of a matrix;   and

assigning variables representing likelihood whether

foreground or background to the parts in the matrix.


27.   (Canceled).


28.   (Currently amended) A method as in claim [[27]]26,

wherein said assigning comprises

classifying the images into the classes of whether the

object is present  or whether the object is absent  by choosing

the class with the maximum a posteriori probability.

13